

LISTING OF THE CLAIMS:

1. (previously presented) An apparatus for protecting occupants of vehicles, said apparatus comprising:

an object detector configured to be installed in a motor vehicle and to monitor a position of an object relative to a vehicle;

a processor in communication with said object detector and configured to be installed within the vehicle and to determine a likelihood of a collision between the vehicle and the object based upon data received from the object detector and a calculated future path of the vehicle; and

a deployment device in communication with said processor and configured to be installed within the vehicle and to deploy a reversible physical safety countermeasure before the collision occurs if said processor determines that the collision is likely.

2. (original) The apparatus of claim 1, wherein said processor is configured to determine a likelihood of a collision between the vehicle and the object occurring within less than 1 second after a present time.

3. (previously presented) The apparatus of claim 1, wherein said deployment device is configured to:

deploy an irreversible physical safety countermeasure before the collision occurs if said processor determines that the collision is likely within a first time period after a present time; and

deploy a reversible physical safety countermeasure before the collision occurs if said processor determines that the collision is likely within a second time period after the present time.

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4. (previously presented) The apparatus of claim 3, wherein said irreversible physical safety countermeasure is deployed if a speed of the vehicle is above a threshold speed.

5. (original) The apparatus of claim 3, wherein the first time period comprises a time period approximately between 0.3 and 0.5 second after the present time.

6. (original) The apparatus of claim 3, wherein the second time period comprises a time period approximately between 0.5 and 1.0 second after the present time.

7. (original) The apparatus of claim 1, wherein said object detector includes a radar-based device.

8. (original) The apparatus of claim 1, wherein said deployment device is configured to deploy the physical safety countermeasure before the collision occurs if said processor determines that a probability of the collision is greater than 99%.

9. (original) The apparatus of claim 1, wherein the physical safety countermeasure is configured to at least one of change a height of a bumper on the vehicle, tighten a seat belt on the vehicle, apply a brake on the vehicle, inflate an air bag on the vehicle, and control steering of wheels of the vehicle.

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10. (original) The apparatus of claim 1, further comprising a vehicle movement detector in communication with said processor and configured to monitor movement of the vehicle, said processor being configured to determine a likelihood of a collision between the vehicle and the object based upon data received from the vehicle movement detector.

11. – 15. (canceled).

16. (previously presented) A method of protecting occupants of vehicles, comprising the steps of:

providing an object detector within the vehicle;

calculating a future path of the vehicle;

determining a likelihood of a collision between the vehicle and an object based upon data received from said object detector and the calculated future path of the vehicle; and

deploying a reversible physical safety countermeasure within the vehicle before the collision and dependent upon said determining step.

17. (previously presented) The method of claim 16, wherein said determining step comprises determining that the vehicle is likely to be involved in a collision that will occur within less than 1 second after a time of the determining.

18. (previously presented) The method of claim 16, wherein the determining step includes:

sensing that the vehicle is likely to be involved in a collision with an object; and

monitoring a rate of change of a position of the object relative to the vehicle.

19. (previously presented) The method of claim 16, comprising the further step of deploying an irreversible physical safety countermeasure, each of said step of deploying a reversible physical safety countermeasure and said step of deploying an irreversible physical safety countermeasure being dependent upon a time at which the collision is likely to occur.

20. (previously presented) The method of claim 16, wherein the determining step includes:

sensing that the vehicle is likely to be involved in a collision with an object; and

monitoring movements of both the vehicle and the object.

21. (previously presented) The method of claim 16, wherein the determining step includes:

calculating a plurality of factors related to movements of at least one of the vehicle and an object;

calculating a decision rating based upon the factors; and

comparing the decision rating to a threshold value.

22. (original) The method of claim 21, wherein the decision rating is calculated as an average of the factors.

23. (original) The method of claim 21, wherein the factors include at least one of an offset from lane center based missed distance, a ratio of projected lateral movement to required lateral movement, a radius of curvature of the vehicle, and a projected Y intercept.

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24. (previously presented) The method of claim 11, wherein said safety countermeasure comprises a reversible safety countermeasure.

25. (previously presented) The method of claim 11, wherein said sensing includes calculating a plurality of location coordinates and times of arrival of the vehicle at each of the coordinates.

26. (previously presented) The method of claim 21, wherein the factors include an offset from lane center based missed distance.

27. (previously presented) The method of claim 21, wherein the factors include a ratio of projected lateral movement to required lateral movement.

28. (previously presented) The method of claim 21, wherein the factors include a radius of curvature of the vehicle.

29. (previously presented) The method of claim 21, wherein the factors include a projected Y intercept.